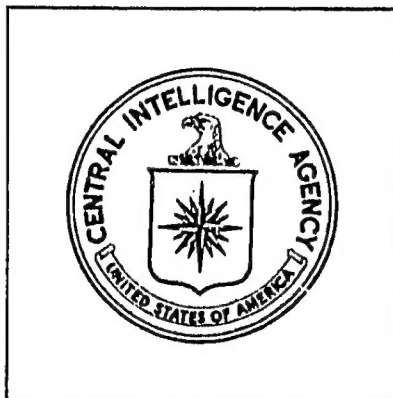


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*The Malacca-Singapore Straits:  
Passageway of International Concern*

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Central Intelligence Agency  
Directorate of Intelligence  
February 1974

**THE MALACCA-SINGAPORE STRAITS:  
PASSAGEWAY OF INTERNATIONAL CONCERN**

**Summary**

The Malacca and Singapore Straits, long a vital link in the major maritime trade route between the northern Indian Ocean and the Pacific, have been given special prominence by the claim of Indonesia and Malaysia that vessels sailing through the Straits do so under the right of innocent passage. Their assertion raises the issue of control over more than 100 other straits around the world which are less than 24 miles wide and have traditionally been regarded as international waterways.

Both Indonesia and Malaysia charge that uncontrolled use of the Straits by foreign warships is a threat to their security and that lack of controls over other ship traffic in the Straits encourages smuggling and illegal immigration. Indonesia's demand for prior notification of the movement of all foreign warships through the waterway has gone unheeded by both the United States and the Soviet Union, the major naval powers operating in the region.

The threat of pollution by the growing fleet of supertankers is one of the principal reasons that Indonesia and Malaysia are pressing for controls. Supertankers now using the Malacca-Singapore Straits are straining the capacity of the narrow, shallow, and congested waterway, and the risk of accident and accompanying oil spill is high.

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Although there has as yet been none, a major oil spill from a supertanker accident could cause millions of dollars worth of damage to the Straits' ecology, particularly to the fishing industry. The Straits countries insist that even with navigational improvements the passage is not safe for use by ships larger than 200,000 deadweight tons (dwt). Meanwhile, 250,000-dwt tankers enroute from the Middle East to Japan continue to sail through the Malacca-Singapore passageway rather than detour to the longer and more expensive route via the Lombok and Makasar Straits.

Since it appears Japan must continue to rely on Middle East oil, the supertanker traffic through the Straits will continue as long as oil is shipped on tankers of 250,000 dwt or smaller. The touted ship canal or oil pipeline across Thailand's Kra Isthmus could handle only part of Japan's Middle East oil, and thus the construction of either would not eliminate supertankers from the Straits.

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1. The Malacca-Singapore Straits is a chokepoint in the most direct maritime route between the northern Indian Ocean and the Pacific (Map A, following text). This 550-mile waterway, separating West Malaysia and Singapore from Indonesia, has for centuries been regarded as an international passageway; however, Indonesia and Malaysia challenge its international status and threaten to impose controls on ship traffic that they consider detrimental to their interests. Such traffic includes warships of both the United States and the USSR and supertankers that carry the nearly 80 percent of Japan's crude oil requirements supplied by the Middle East. During the Middle East crisis in late 1973 movement of a task force of the U.S. 7th Fleet westward through the Straits without prior notification to the Indonesian Government exacerbated an already sensitive issue in U.S. - Indonesian relations. Why did Indonesia and Malaysia "nationalize" the Malacca-Singapore passageway? Was security their major concern? Were there economic reasons? Or was the fear of pollution from Japan-bound supertankers the real reason?

Background: The "Nationalization" of the Straits

2. Prompted largely by Japanese initiatives in the matter, the Governments of Indonesia, Malaysia, and Singapore issued on 16 November 1971 a joint statement which maintains that responsibility for safety of navigation in the Straits rests solely with the Governments of the three Straits countries. Indonesia and Malaysia contend in the statement that the Straits are not international waterways; they, therefore, recognize use of the Straits for international shipping only in accordance with innocent passage, the principle that allows only those vessels considered not prejudicial to the peace, good order, or security of the coastal state to pass freely through the territorial seas of a foreign state.\*

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\* *Indonesia has claimed a 12-mile territorial sea since 1957, and Malaysia extended her territorial sea to 12 miles in 1969. A boundary separating the waters of Indonesia from those of Malaysia in the Malacca Strait, which narrows to less than 8 miles, was delineated in 1970. A treaty between Indonesia and Singapore, signed in May 1973, delineated their boundary in the Singapore Strait -- less than 6 miles wide at its narrowest point.*

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Singapore only took note of her neighbors' positions on sovereignty. Economically dependent on the free flow of ships through the waterway, she contends that the Straits are international and that all ships have the right to free transit.\*

3. Indonesia was the leader in promoting the "nationalization" policy and now regards the Malacca Strait to be under Indonesian and Malaysian sovereignty without qualification. Although Indonesia has shown no indication that she will drop her sovereignty claims in the Strait, they could be used as a *quid pro quo* to obtain other rights at the Third International Law of the Sea (LOS) Conference, now scheduled to convene in Caracas in June 1974. Indonesia, for example, might agree to drop her demands for control over shipping in the Strait if other countries were to accept her broad claim to sovereignty over all the waters of her archipelago.\*\* Malaysia, although in general agreement with Indonesia over the rights of transit in straits used for international navigation, is probably more willing to drop her demands for control over all shipping through the Strait.

4. The Malacca-Singapore Straits sovereignty question exemplifies the issue of sovereignty over all straits that traditionally have been recognized as international waterways not subject to control by the coastal states. If a 12-mile territorial sea is adopted at the LOS Conference, navigation in more than 100 straits less than 24 miles wide could be restricted by the coastal states. Straits countries such as the Philippines, Spain, Morocco, and Greece have supported Indonesian-Malaysian "nationalization," agreeing that navigation through the straits should be governed by the principle of innocent passage, not free transit. The maritime countries, led by the United States and the USSR,

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\* *Unimpeded transit by ships and aircraft through and over straits used for international navigation.*

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argue that passage (including submerged submarines and overflights) should continue to be without restrictive coastal-state controls.

Factors in the Formulation of "Nationalization"

Military and Strategic

5. Recognition of the increased strategic importance of the Malacca-Singapore Straits was a factor in the Indonesian-Malaysian "nationalization." The power vacuum in the Indian Ocean has been filled by the navies of both the United States and the USSR since the withdrawal of the British Navy in 1971. Passage of warships of both countries through the Straits from the Pacific to the Indian Ocean during the 1971 India-Pakistan conflict may have accelerated the "nationalization" decision. Both Indonesia and Malaysia view the growing traffic of foreign warships as a threat to their security and also fear that lack of any control over traffic in the Strait could encourage smuggling and illegal immigration. Indonesia, alleging foreign support to Sumatran rebels during the anti-government rebellions of the 1950's, is particularly sensitive to the perils of illegal entry along her Sumatran coast. The Malacca countries initiated joint naval patrols in the Strait in 1973. Their announced intention was to prevent seaborne infiltration by subversive elements and monitor foreign warship traffic as well as to control piracy and smuggling, to police fishing activities, and to prevent pollution. They conducted a joint naval exercise in the Strait in December 1973.

6. Although officials of both Malacca countries have discussed the imposition of stringent controls on warships in the Strait, ranging from requiring information on cargoes to an outright ban, neither country has yet demanded authorization for warship passage because their navies lack the strength to enforce such an edict. Indonesia has, however, requested prior notification of the passage of all foreign warships through the Strait. Malaysia, less plagued by illegal immigration and smuggling than Indonesia, less inclined to clash with major world powers over the Strait issue, and more willing to defer the question of sovereignty until the 1974 LOS meetings, has not requested prior



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notification. Passage of both U.S. and Soviet warships from the Pacific to the Middle East in November 1973 without prior notification toughened Indonesia's already staunch "nationalization" posture.\*

### Economic

7. Although economic considerations did not play a key role in the "nationalization" of Malacca,\*\* Malaysian officials have advanced schemes to make money from its use by foreign ships. Malaysian politicians have, from time to time, suggested that fees be imposed on all foreign ships using the Strait. The Chairman of Pemas (the State Economic Corporation), unofficially proposed a toll rate in 1972 that he estimated would earn a yearly revenue of nearly \$150 million for Malaysia and Indonesia. His proposal would, in effect, penalize those ships that called at Singapore by assessing smaller fees for ships stopping at either Indonesian or Malaysian ports, an apparent attempt to get more shipping business for Malaysia and Indonesia at Singapore's expense. Indonesian officials have considered a plan to levy a fee on all supertankers using the Lombok Strait between Bali and Lombok (Map A). Their efforts to reroute supertankers larger than 200,000 deadweight tons (dwt) from a route through Malacca to one through Lombok, therefore, may in part be economically motivated.

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*\*\* The 1958 LOS Convention on the Continental Shelf accorded coastal states jurisdiction over all resources on and under the adjacent continental shelf to a water depth of 200 meters. All petroleum deposits in the Straits, therefore, are already under the unchallenged jurisdiction of the Straits states.*

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8. Neither of these proposals has been officially endorsed by either government, principally because the 1958 LOS Convention on the Territorial Sea and Contiguous Zone forbids a toll on ships for passage through the territorial sea. Charges for specific services provided to ships sailing through the territorial sea can, however, be levied by the coastal state. Indonesia and Malaysia want the right to collect revenues from ships using the Malacca Strait to offset the cost of ensuring navigational safety and pollution control. Officials from both countries are probably waiting for adoption of a 12-mile territorial sea at the 1974 LOS Conference to clarify Malacca's sovereignty before more strenuously advancing the toll proposals.

9. Since the closure of the Suez Canal in 1967, Indonesian officials have advanced a plan to develop Tjilatjap (Cilacap), on Java's south coast (Map A), as a repair and bunkering port for merchant ships forced to detour to the Cape Horn - Lombok Strait route between Europe and the Far East. The plan has never gotten off the drawing board, however, and Indonesia may hope that the "nationalization" of the Malacca-Singapore waterway and the rerouting of supertankers larger than 200,000 dwt to a route south of Java and through the Lombok Strait will revitalize the scheme.

10. In 1971, Malaysian officials announced plans to develop supertanker repair facilities at Port Klang (formerly called Port Swettenham), Malaysia's largest port. Talk of the Port Klang proposal has been stilled, however, since a joint Malaysian-Indonesian announcement released in 1972 discouraged the use of the Straits by supertankers larger than 200,000 dwt. Development of supertanker facilities at Port Klang could have taken business away from Singapore and would have dampened plans by Indonesian officials to develop Tjilatjap (Cilacap) as a supertanker repair port. Singapore's ship repair facilities can now accommodate 230,000-dwt tankers, and a drydock capable of handling 400,000-dwt vessels is under construction. The decision to construct the facilities to handle the larger vessels presumably preceded recent surveys which indicate that vessels in the 400,000-dwt category may be unable to safely sail through the Malacca-Singapore passage-way (See Paragraph 15).

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Pollution: The Real Issue?

11. Until the mid 1960's, when the supertankers (200,000-dwt or larger) were first launched, international tanker traffic was of little concern to states through whose straits the tankers were sailing. Maneuverability of the smaller tankers had not been a major problem, and their drafts were not critical in relation to the depths of the straits. The *Torrey Canyon* disaster, although involving a medium-size tanker, focused attention on the hazard to the marine environment created by the larger tankers because of their reduced maneuverability and increased draft.\* The countries flanking the narrow, shallow, and congested shipping channels of the Malacca-Singapore Straits have particular reason to fear pollution by supertankers.

12. Malacca Strait, more than 200 miles wide at its northern end, constricts to no more than 8 miles amid a cluster of islands in the south (Map B, following text). Singapore Strait is less than 6 miles wide at its narrowest point. Shipping channels in Malacca narrow to 2 1/2 miles, those in Singapore to about 1 mile. Supertankers, with lengths exceeding 1,000 feet, have limited maneuverability: the 200,000-tonners require more than 20 minutes and 3 miles to come to an emergency stop from full speed ahead. Navigation through such constricted channels, therefore, must be slow and careful.

13. Channel depth is even more critical than width in limiting the size of ships that can safely use the Straits. Depths in the northwestern part of Malacca are everywhere more than 125 feet, more than adequate for even the largest supertanker, but in the narrow shipping lanes in the southeastern part and in the Singapore Strait, depths are in several places only in the 75 to 80 foot range. Table I indicates the approximate drafts of today's supertankers and the minimum depth required for safe passage.

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\* The 119,000-dwt *Torrey Canyon* grounded off the southwest coast of England in 1967. Some 80,000 tons of oil were spilled into the sea, much of it washing up onto the nearby shores of England and France. Damage to all parties, direct and indirect, was estimated at more than \$28 million.

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TABLE I\*

Tonnage (dwt)	Draft (feet)	Minimum Depth (draft+10%)
150,000	60	66
200,000	62	68.2
250,000	66	72.6
325,000	80**	88
484,000	92	101.2

14. In 1967, the 205,953-dwt *Idemitsu Maru* became the first vessel of more than 200,000 dwt to pass through the Malacca-Singapore Straits. Although her loaded draft of only 58 feet was far less than drafts of vessels now using the Straits, the ship scraped bottom twice. Coming close on the heels of the *Torrey Canyon* disaster, the *Idemitsu Maru* incident clearly illustrated the problems of use of the Straits by supertankers and the urgent need for surveys to enhance the safety of the shipping channels. At least one other supertanker has since scraped bottom in the Straits.

15. Japan, the major user of the Straits, surveyed critical shoal areas in 1969. Since "nationalization" in 1971, however, Malaysia and Indonesia have objected to such unilateral operations, and subsequent surveys have been conducted by a consortium of Japan and the three littoral

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Sixty percent of the tonnage of tankers being built or on order at the end of 1972 was in the 200,000- to 285,000-dwt category; another 17 percent was in even bigger ships. The largest tanker in service is a 484,000-dwt vessel, and at least one more of this size is being built. Twenty-two vessels on order will have capacities more than 350,000 dwt. A 700,000-tonner will be in operation in 1976. A million-tonner, with 4 detachable tank caissons each with a 250,000-ton capacity, is the subject of a feasibility study.

\*\*

Some of the specially designed supertankers of 350,000 dwt now on order draw only 72 feet.

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countries. Using survey findings, officials of the four countries have met to establish a navigation improvement program, including a traffic separation scheme first proposed by the UN's Intergovernmental Maritime Consultative Organization (IMCO) in 1967. The latest survey, conducted in 1972, shows that a depth of at least 23 meters (approximately 75 feet) can now be assured. While the Straits countries agree with Japan on the findings of the surveys, there is disagreement as to the conclusions that can be made from them. The Japan Ministry of Transport contends that the Malacca-Singapore sealanes, with a minimum depth of 75 feet, are safe for use by tankers larger than 200,000 dwt (no upper tonnage limit specified). Malaysian and Indonesian officials, on the other hand, argue that the shipping channels, even with a minimum depth of 75 feet and with improved navigational aids, are not necessarily safe for passage by the 200,000-tonners. They continue to request that supertankers of this class detour to the deeper Lombok Strait route to the southeast.

16. Most of the more than 35 tankers exceeding 200,000 dwt that currently ply the Middle East - Japan run use the Malacca-Singapore route. The largest tanker to have sailed through the Malacca-Singapore Straits is a 276,000-dwt vessel, which, according to Japanese sources, has made several fully loaded trips. According to the 3 July 1972 edition of the *Japan Petroleum Weekly*, two other Japanese tankers with tonnages more than 250,000 dwt (250,749-dwt and 257,226-dwt) use the Straits.

17. Heavy traffic in the Straits compounds the likelihood of a supertanker accident. According to the most recent count of ships, taken by the Singapore Ministry of Communications over a 4-week period (7 February to 6 March 1973), 4,019 ships sailed through the passage (a rate of about 53,000 yearly). Table II, based on the Ministry's survey, categorizes traffic during the 4-week period by ship size and function and compares the 1973 figures with the results of a similar survey in 1969.

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TABLE II

Ship Size (dwt)	1973	1969
more than 30,000	276*	162
5,000 - 30,000	1,857	2,344
75 - 5,000	1,882	940
under 75	4	177
	<u>4,019</u>	<u>3,623</u>

## Ship Type

Cargo	2,595	1,961
Tankers and Bulk Carriers	1,115	1,231
Tugs, Fishing Ships, Sailing Craft, etc.	38	27
Unclassified	271	404

18. Shipping unquestionably is the largest polluter of the Malacca-Singapore Straits in view of the paucity of shore-based pollution sources and diminution of offshore oil exploration in early 1973.\*\* There has not been a

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\* Of these, 46 are supertankers of more than 180,000 dwt.

\*\* Seven wells had been drilled in Malacca in 1972, but results were not encouraging and all exploration activity had ceased by early 1973. Exploration in the Strait, however, was expected to resume later in 1973. Because oil discoveries in the Strait could bring substantial incomes to the Straits countries, Indonesian and Malaysian officials have not been as vocal about the pollution threat from the oil exploration rigs as from the supertankers. The danger, however, has been officially acknowledged. The Malaysian Minister of Health wrote an article in 1971 charging that the rigs were a potential source of pollution.

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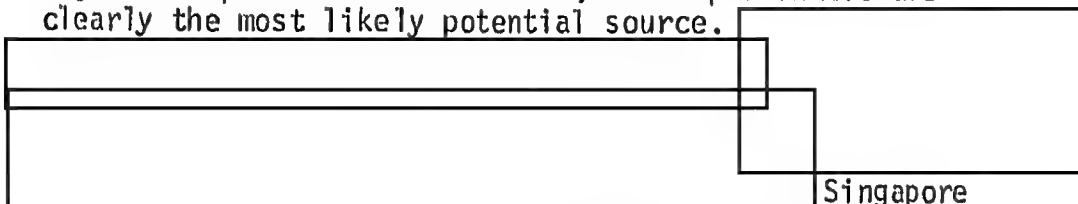
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major oil spill in either strait, but supertankers are clearly the most likely potential source.

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Singapore

has been quiet on the pollution issue despite greater hazards to navigation in the Singapore Strait than in Malacca and a higher frequency of minor accidents and oil spills. Singapore, nonetheless, will probably join with Malaysia, Indonesia, and other world straits states at the 1974 LOS Conference to promote new international laws to compensate coastal states for pollution damage from ships.

19. Malaysia has been more concerned about pollution than Indonesia, largely because the shipping lanes hug the Malaysian coast for much of the length of the Malacca Strait, and Malaysian waters and shores (including tourist beaches) would suffer more from an oil spill than those of Sumatra on the other side (Map B). Malaysia, therefore, has stressed the pollution issue in asserting her claim to sovereignty in the Strait. Both Malacca countries are concerned about the damage to fishing operations that could be caused by a sizable oil spill in the Strait. Indonesia, in fact, contends that the Sumatran fishing industry has already been severely damaged by oil flushed into the Strait by freighters and tankers. The annual fish catch in the Strait normally numbers in the hundreds of thousands of pounds.

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21. Concern by Malaysia and Indonesia for ship-borne pollution has not been limited to that by oil-carrying vessels. Both countries joined other straits states at the

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United Nations in 1973 to draft articles to regulate passage through the straits of nuclear-powered ships or ships carrying nuclear weapons or any other potentially harmful material. Although the 1958 LOS Convention on the Territorial Sea and Contiguous Zone defined "innocent passage" as passage that "is not prejudicial to the peace, good order, or security of the coastal state," Malaysia and Indonesia interpret the term to mean passage that is not detrimental to the coastal state in any way. By this definition, "innocent passage" could be applied to deny entry into the Strait to any vessel carrying cargo or powered by a fuel that, if leaked, could endanger the local ecology.

22. Dredging has been proposed by Japan to improve the navigability of the Malacca-Singapore Straits. Malaysia and Indonesia object on the grounds that deeper water would encourage greater use by foreign warships that would threaten their security and by larger oil tankers that would pollute their waters and shores. Turbulence in the Strait's waters created by dredging, moreover, would have a deleterious effect on sealife. Because massive amounts of silt are continuously carried into the Malacca Strait by the rivers of Malaysia and Indonesia, it is unlikely that dredging operations could significantly increase the depth of the entire passageway. At best, dredging could remove some small shoals to ease the passage of ships of the size already using the Straits.

#### Alternatives to Supertanker Use of Malacca-Singapore

##### The Lombok-Makasar Straits?

23. Because of the growing fear of accidents in the hazardous shipping channels of the Malacca-Singapore Straits, Indonesia and Malaysia announced in 1972 that the passage through the Lombok and Makasar Straits is the designated shipping route for tankers exceeding 200,000 dwt (Map A). Oil shippers, however, have disregarded the edict. Most supertankers on the Middle East to Japan run continue to use the Malacca-Singapore route because it is nearly 1,300 nautical miles shorter than the one through the Lombok and



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Makasar Straits, the only viable alternative.\* (The total mileage between the Middle East and Japan is about 6,800 nautical miles via Malacca-Singapore and 8,100 nautical miles via Lombok-Makasar). The round trip for a 200,000-dwt vessel between the Persian Gulf and Japan via Malacca-Singapore normally takes about 37 days, via Lombok-Makasar, about 42 days. Use of the former route adds one round trip yearly to a ship's schedule. According to the 3 July 1972 *Japan Petroleum Weekly*, if all Japanese tankers larger than 200,000 dwt are forced to use the Lombok-Makasar route for both east-bound and westbound trips, the added yearly cost to the Japanese petroleum industry would be 8,100 million yen (about US \$26,000,000).

24. The Lombok-Makasar shipping route, which already handles annually several thousand cargo ships sailing between Europe and the Far East around Africa, is far better suited to accommodate supertanker traffic than the Malacca-Singapore route. The main Lombok channel, the narrowest section of the waterway, has a minimum width of 5 1/2 miles and depths greater than 600 feet in most places. The Makasar Strait is even broader and its shipping channel equally deep. North of Sulawesi the route turns northeastward through the deep Celebes Sea and enters the Pacific south of the Philippines. Indonesia and Japan agreed in May 1973 to undertake a hydrographic survey of the Lombok-Makasar passage to correct emplacement of navigational aids; the survey is expected to get under way early in 1974.

25. The Lombok Strait, like the Malacca-Singapore Straits, narrows to less than 24 miles and will fall under Indonesian sovereignty if a 12-mile territorial sea is adopted at the

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\* A route between the Middle East and Japan that passes through the Sunda Strait, between Sumatra and Java, is only about 700 nautical miles longer than through the Malacca-Singapore Straits (Map A). Although some ships plying the Europe - Far East route sail through the Sunda Strait, shallows in the western Java Sea and a narrow shipping channel with strong currents in the strait itself makes inadvisable its use by tankers much larger than 100,000 dwt.

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LOS Conference. Indonesia could also "nationalize" the Lombok Strait in order to control the use of the Lombok-Makasar passage by Japan-bound supertankers.

26. Since neither Indonesia nor Malaysia has the naval strength to block the Malacca Strait, the extent to which supertankers on the Middle East - Japan run will divert to the Lombok-Makasar route will depend more on ship size than on political or military considerations. Tankers in the 200,000- to 250,000-dwt class will probably continue to use Malacca-Singapore. Depths in this passage, however, will continue to force tankers much larger than 250,000 dwt to detour to the longer but safer Lombok-Makasar route. If Japan phases out 200,000- to 250,000-dwt tankers in favor of larger vessels, Lombok-Makasar will handle most of the Middle East - Japan tanker traffic. The recent Japan-Indonesia announcement of plans to survey the Lombok-Makasar route in 1974 suggests that Japan anticipates that an increasing number of her supertankers will be using this route.

More Oil From Southeast Asia?

27. Southeast Asia currently supplies about 16 percent of Japan's crude oil (43,720,000 tons in 1973), most of it from Indonesia. Most of the rest is supplied by the Middle East. Indonesia has argued that an unchallenged international status for the Malacca-Singapore Straits coupled with better navigational aids could improve Japan's access to Middle East oil and adversely affect the competitive edge of Indonesian oil. Japan, however, already consumes about 77 percent of Indonesia's oil exports, a figure unlikely to increase in view of Indonesia's desire to diversify her markets.

28. Japan would like to get more of her oil from Southeast Asia for three basic reasons: Arab sources are unreliable, as illustrated by threats in late 1973 to curtail oil exports to Japan (Arab countries provide about 44 percent of Japan's oil, Iran about 34 percent); shipping costs for Southeast Asian oil are far less since Indonesia is only 3,000 miles from Japan while the Middle East is nearly 7,000 miles away; and Southeast Asian oil is low in sulphur, an important consideration for Japan's pollution-conscious

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consumers. Even if Southeast Asia were to dramatically increase its oil production and its allotment to Japan, however, Middle East oil flowing to Japan probably would continue to increase because of the rapid escalation of Japan's fuel consumption.\* An increase in Southeast Asian oil supplies to Japan, therefore, is highly unlikely to reduce supertanker traffic through the Malacca-Singapore Straits.

A Kra Isthmus Canal or Pipeline?

29. The construction of either a ship canal or an oil pipeline across Thailand's Kra Isthmus, projects that have been discussed by Thai officials for years, would ease the pressure on Japan's oil supply route from the Middle East (Map B). A route across the isthmus would be 350 to 450 miles shorter than the Malacca-Singapore Straits route (depending on the route selected for the canal or pipeline) and 1,650 to 1,750 miles shorter than the Lombok-Makasar Straits route. More importantly, construction of a canal or pipeline would remove the threat of Malaysian or Indonesian interference with supertanker traffic. It would, however, give Thailand a measure of control over Japan's oil supply, a factor to be considered in view of anti-Japanese public sentiment in Thailand.

30. Both projects would be expensive. The canal in particular, although seriously considered by the Thai Government in recent years, may be prohibitively costly and would probably be unable to accommodate the larger supertankers. The Thais have talked of a one-way canal for loaded eastbound vessels up to 500,000 dwt; westbound ships would still use one of the straits routes. Plans for a canal of this capacity may be unrealistic, however, since it would require massive excavation both on the isthmus and offshore. No determination

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\* Japan's oil consumption projections, however, are clouded by rapid increases in the price of crude and by the unreliability of the Middle East sources.

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has yet been made whether nuclear explosives can safely be used for excavation. The canal could be completed in no less than 8 years if nuclear explosives were used, and conventional methods would require at least twice that time. A minimum of 180,000 people reportedly would have to be resettled if nuclear devices were used.

31. A pipeline, although limited to the transfer of oil and therefore less versatile than a ship canal, would be considerably cheaper to construct than a canal and, once work is begun, could be completed in 3 to 4 years. It would have a yearly capacity of 110 to 140 million tons of crude oil. Supertankers up to 500,000 dwt would discharge their cargoes at the western end of the pipeline, and the oil would be pumped 108 miles to the eastern terminus for reloading into vessels up to 200,000 dwt, the largest able to negotiate the shallow approaches.

32. Because oil tankers do not normally call at either Malaysian or Indonesian ports enroute to Japan, neither country would suffer if all tanker traffic were diverted to a Kra route. Such a diversion would, in fact, remove from the Malacca-Singapore Straits most of the ships that the Straits countries charge are a threat to the ecology of their waters and shores. Only Singapore, with an economy heavily reliant on shipping, would suffer, and even she might in the long run welcome some relief from the congestion in her harbor. In any event, the construction of either a canal or pipeline or both would not eliminate all supertanker traffic from the Malacca-Singapore Straits. A pipeline could serve only a fraction of even present Japanese needs, and by the time a canal was completed, it would probably be far from adequate.

#### Outlook

33. Indonesia will bargain hard at the 1974 LOS meetings for international recognition of a "nationalized" Malacca-Singapore Straits. A strong stand by the maritime nations for continued international status for the Straits (along with more than 100 other passages less than 24 miles wide) coupled with weak Malaysian support for Indonesia may, however, lead to compromise. Indonesia may drop her demands in exchange for

some degree of international recognition of her claim to sovereignty over all the seas within her archipelago. She will want, at a minimum, the economic rights to all resources in and under the seas of the archipelago. Malaysia is less concerned with extending her sovereignty into the Straits than with alleviating the threat of pollution to her marine environment. She probably will be willing to drop her demands for "nationalization" of the waterway if she is assured of adequate international provisions -- such as a limit on the maximum draft of tankers sailing through the passageway -- to minimize the risk of supertanker accidents in the Straits. Malaysia probably will also demand guaranteed adequate compensation for any accident.

34. Japan's oil shippers would suffer a large financial loss if all supertankers larger than 200,000 dwt were rerouted to the Lombok-Makasar route. They contend that better navigational aids in the Malacca-Singapore Straits would ensure a reasonably safe passage of vessels up to at least 250,000 dwt. Most supertankers now on the Middle East-to-Japan run, therefore, will continue to use the Malacca-Singapore route, even though Indonesia and Malaysia may continue to insist that all vessels larger than 200,000 dwt detour to the Lombok-Makasar route. Neither an increase of Southeast Asian oil exports to Japan nor construction of a canal or pipeline across the Kra Isthmus would eliminate supertanker traffic from the Straits.

Petroleum Tanker Routes: Persian Gulf to Japan

Map A

